

*MACROSIPHUM PISI* (Kalt.). Of the 64 specimens taken, only six were collected in the morning. The numbers in the evening collections were low and regular, until none were caught during the four days preceding May 22. The collections were greatest during the four days preceding May 30, and the numbers encountered dropped abruptly after this. The temperature was rising and the weather dry during this flight.

*PEMPHIGUS LACTUCAE* (Fitch). This species was represented by 48 specimens, 25 taken in the morning and 23 in the evening. The numbers collected in the morning were constant and low until they ceased flying, during the four days preceding May 26. Then they increased during the four days preceding June 3, and disappeared from the air by June 7. The evening numbers were constant and low, with the only peak during the four days preceding May 18. None were collected after June 7.

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### **Immature and Adult Stages of New Species of Chironomidae (Diptera).**

By O. A. JOHANNSEN, Ithaca, New York.

In 1896 Dr. S. W. Williston described a male specimen of *Chironomus* from the island of St. Vincent without attaching a specific name to it. That he had several specimens before him from the same region, some of them females, is evident from his statement ". . . .and, rarely, the posterior part of the abdomen also brownish. . . . Length, 2-2.5 mm." In 1905 I rashly attached the specific name *willistoni* to the species without having examined a specimen, not realizing that in the Cornell University Collection there were two female specimens from St. Vincent bearing a label with the manuscript name *Chironomus delicatulus* in Dr. Williston's handwriting. Why no specific name was published by Williston cannot be conjectured. It

is possible that the male upon which the description was based was destroyed or that having discovered that the term *C. delicatulus* was preoccupied for one of Philippi's species from Chili, Williston cancelled the name. A letter received from Dr. C. H. Curran of the American Museum of Natural History and another from the late F. W. Edwards of the British Museum, indicates that in neither of the institutions mentioned is there a specimen of this species among Williston's St. Vincent Diptera. Since the specimens in the Cornell University collection are co-types it seems desirable to enlarge upon Dr. Williston's five-line description.

CHIRONOMUS (STENOCHIRONOMUS) WILLISTONI Johannsen.

♀. Head, including antennae, proboscis and palpi yellow. Antennae 0.5 mm. long, intermediate segments bulbous on basal half, slender apically, the penultimate three-fourths as long as the slender and tapering apical segment. Basal palpal segment short, second and third subequal, each nearly three times as long as the first, fourth distinctly longer (shrivelled in the specimen). Eyes black, separated above the antennae by a distance nearly equal to the width of the narrow dorsal extension.

Thorax pale yellow, mesonotum shining, with three slightly darker yellow vittae; pronotum much reduced.

Abdomen pale yellow, the last segment pale brownish.

Wings hyaline, unmarked, veins yellowish white; first radial branch ends at three-fourths the length of the wing measured from the humeral crossvein, the second radial branch is nearly contiguous with the first, the posterior branch ends slightly distad of the level of the apex of the media, the cubital fork lies over .06 of the wing length distad of the proximal end of the crossvein, measurements made parallel to the costal margin. Squamae with hairs; halteres yellow.

Legs yellowish white, the two spurs on each of middle and hind tibiae conspicuously black and equal; fore tibiae a sixth shorter than the femora, the combined fore femur and tibia one-sixth longer than the wing. Empodium and pulvilli well developed. Fore tarsi broken off in both specimens. Length 2 mm., wing 2 mm.

The male as described by Williston resembles the female in coloring. The fore basitarsi are said to be one-fourth longer than their tibiae. The length is given as 2 to 2.5 mm. from which one may infer that the male measured 2.5mm.

Dr. H. K. Townes called my attention to the similarity between *Chironomus* (*Stenochironomus*) *macateci* Malloch and *C. willistoni*. Both belong to that group of the subgenus *Stenochironomus* in which the wings lack dark markings. They are similar in coloring although the apex of the abdomen in *C. macateci* is much darker. They appear to differ, however, in the basitarsus-tibial ratio which is given at 1.25 by Williston for *C. willistoni*, and as 1.20 by Malloch for *C. macateci*. Specimens of the latter, one from the type locality, have the ratio of 1.14-1.16. The cubital fork also is not so far distad of the crossvein in the latter, which species is also a trifle greater in size.

***Orthocladius* (*Dactylocladius*) *dubitatus* n. sp.**

This is a species which in American literature has in part been referred to *O. sordidellus* Zett. Though resembling it in color, Zetterstedt's species differs in some structural characters being now referred to the subgenus *Psectrocladius*.

♂. Head yellow, eyes bare, reniform; antennae including basal segment brownish, ratio of apical segment to the remaining flagellar segments of the antennae, 0.85; apical segment with numerous short hairs toward the tip. Palpi brownish, ration of lengths of segments to each other as 7: 13: 13: 18.

Thorax yellow including pronotum and scutellum; the three mesonotal vittae, metanotum, pectus and spot on pleura, dark brown, mesonotum somewhat shining.

Tergum of abdomen dark brown or blackish, venter brown, both with slight greenish tinge. Hypopygium brown, its tergite without anal point, basistyle with nearly straight inner margin and without mesad projecting lobe; dististyle simple, inner margin straight, subapical spine, blunt, brown.

Legs dusky yellow, ratio of fore basitarsus to its tibia, 0.65; fore tibia with one, middle tibia with two, hind tibia with one long and one short, slightly flexed spur; hind tibial comb present; empodium large, nearly as long as the claws; pulvilli vestigial; claws with minutely bifid or trifid apex.

Wings somewhat milky, microtrichia not evident; costa distinctly produced;  $R_1$  and  $Cu_2$  end equidistant from the wing base,  $R_{2+3}$  ends slightly before the mid distance between the tips of  $R_1$  and  $R_{4+5}$ ; Media ends slightly behind the wing tip;  $R_{4+5}$  ends well beyond the level of the tip of  $Cu_1$ ; cubitus forks distad of the crossvein; anal vein is produced far beyond the

cubital fork; anal lobe well developed, right angled. Squama with complete fringe; halteres yellow. Length of insect 2.1 mm., a fifth longer in life, wing 1.5mm.

♀. Similar to the male in coloring though tending to be lighter, the vittae of the mesonotum in some cases reddish brown. The first flagellar segment of the antenna is two-thirds, the sixth is over twice as long as each of the three oval intermediate segments. Tarsal claws sharp. Length of insect 1.75, a fifth longer in life.

Ithaca, NEW YORK. Types in the Cornell University collection.

The larva finds a place in couplet 32 in my key (Aquatic Diptera III, p. 60, 1937), the pupa in couplet 24 (l. c., p. 62.)

**Cricotopus flavipes** n. sp.

*Larva.* The larva lying on its side, mines in the leaves of the pondweed, *Potamogeton*. When full grown it measures 6.5 mm. in length. Near each caudo-lateral margin of body segments 4 to 9 (abdominal segments 1 to 6) there is a hair pencil composed of 4 to 6 hairs and on the tenth there is another with 2 to 5 hairs. Ventro-laterally there are in addition several single shorter and very slender hairs on each side of each intermediate segment and dorsally several fine, still shorter hairs.

The head is brown with the margin of the labial plate and the apex of the mandible blackened. There are two eyespots on each side of the head the anterior spot very much smaller than the other. The antennae are very minute (Fig. 7), less than one-fourth as long as the mandible, the first segment scarcely longer than wide, the larger of the two blade-bristles at the tip of the basal segment rather wide and extending nearly to the tip of the fourth segment, the apical four segments together about as long as the basal segment. On the ventral side of the labrum are the usual curved bristles of which a subapical pair is distinctly larger and stouter than the others. A median pair of bifid bristles was not observed. The premandibles (Fig. 6) are unusually stout, curved and blunt-pointed apically. The mandibles (Fig. 2) which lack wrinkles on the convex side, likewise are stout, darkened at the tip, with two lateral bristles, a short accessory tooth, but apparently lacking a mesad projecting brush. The labial plate is very convex in cross-section. When viewed from the ventral side (Fig. 4) only five median teeth show distinctly, the head being strongly laterally compressed, but when the plate is flattened out (Fig. 3) 13 teeth are clearly in evidence. the

second laterals being shortest. Prolegs, claws, anal gills and preanal bristle-bearing papillae are similar to those of *C. trifasciata*.

*Pupa.* The pupa, which measures 4 mm. in length, exhibits the adult coloring a short time before transformation. The thoracic respiratory organs are minute, delicate, white in color, without spinules and clavate in shape, the diameter at the apical fourth about .02 mm. which is a quarter of the total length. The first, seventh and eighth tergites are bare, the second to sixth with a large transverse patch of shagreen on the anterior half and a narrow transverse shagreened fascia near the posterior margin. The intersegmentalia of segments two to six have anteriorly directed spinules which are strongest on the posterior margin of the second tergite. The anal segment, which lacks shagreen, bears lateral lobes each terminating in three nearly straight bristles. The genital sacs in the male extend well beyond the apices of the bristles (Fig. 8), in the female the bases of the bristles lie distad of the caudal ends of the sacs.

*Adult.* ♂ and ♀. Yellow in ground color, the pronotum, scutellum, halteres, legs and terminalia yellowish white. The broad mesonotal vittae, the pectus, a pleural spot, metanotum, anterior three-fourths of each abdominal tergite except the first and last two or three, dark brown to blackish, in general specimens somewhat paler. Antennae brown, basal segment darker, palpi brown; eyes pubescent. Antennal ratio of the male 1.65; of the female 0.44, the sixth segment 1.75 times as long as the fifth, the division line between them feebly marked.

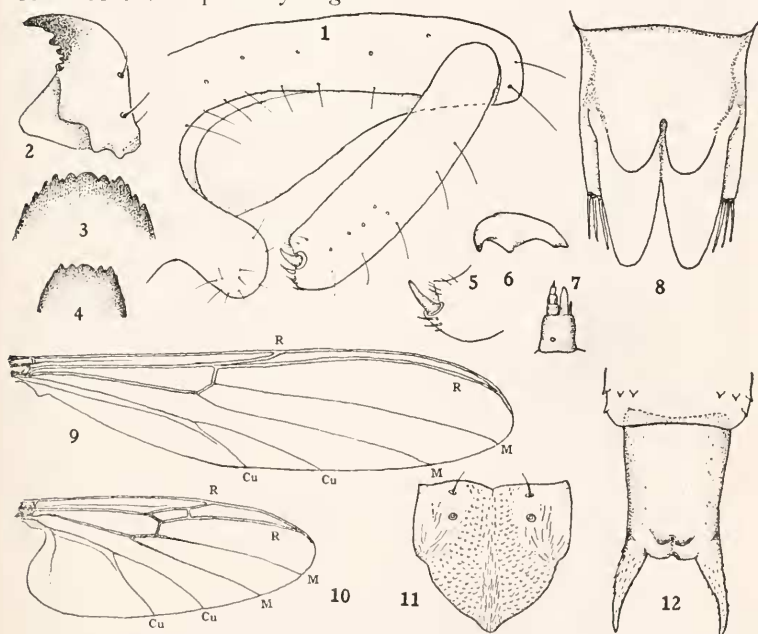
Ratio of fore basitarsus to tibia 0.55 to 0.60; fore tarsi not bearded; empodium  $2/3$  as long as the claws, pulvilli minute.

Wings milky hyaline, veins pale,  $R_{2+3}$  ending about half-way between the tips of the anterior and posterior branches of the radius; costa indistinctly produced beyond the tip of  $R_{4+5}$  which ends well beyond the level of the tip of  $Cu_1$ ; media ends slightly behind the tip of the wing; cubitus forks distad of the crossvein; anal lobe well developed. Squamae fringed.

The hypopygium is of the normal *Cricotopus* type (Fig. 1), the anal point lacking; basisstyle with prominent basal lobe which is slightly wider beyond the middle; the apical spine of the dististyle is about  $2/3$  as long as the diameter of the dististyle near the apex (foreshortened in Fig. 1). Length of male 3.25 mm., of female 2mm., of the wing of both sexes 1.75 mm.

Reared by Mr. C. O. Berg, July and August at Ocqueoc Lake, Presque Isle County, MICHIGAN. Types in Cornell University collection.

The adult of this species is readily distinguished from other members of the genus in having non-annulate yellow legs. The larva will find a place in couplet 1 in my key (Aquatic Diptera III, p. 52, 1937) with Group *Eucricotopus*, differing in having unusually short antennae. It will also find a place in couplet 29, p. 60, which again leads to *Cricotopus* (Group C) but differs in having short antennae and in lacking a mandibular brush. The pupa will find a place in couplet 3, second paragraph, in the key on page 52, differing from *C. fugax* in having non-spinose respiratory organs. It will also trace to the second paragraph of couplet 26, p. 62, *Cricotopus*, differing in the form of the respiratory organ.



*Cricotopus flavipes* n. sp.: 1, Male clasper, X285; 5, Apex of dististyle, X285. Larva: 2, Mandible, X190; 3, Labial plate (flattened), X190; 4 Same, ventral aspect, X190; 6, Premandible, X190; 7, Antenna, X380 Pupa: 8, Caudal segment of male, X75.

*Macropesa similis*: 9, Wing, X12.

*Jenkinshelca albaria*: 10, Wing, X12. Pupa, female: 11, Operculum, X75; 12, Caudal segment, X37.